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Sunset

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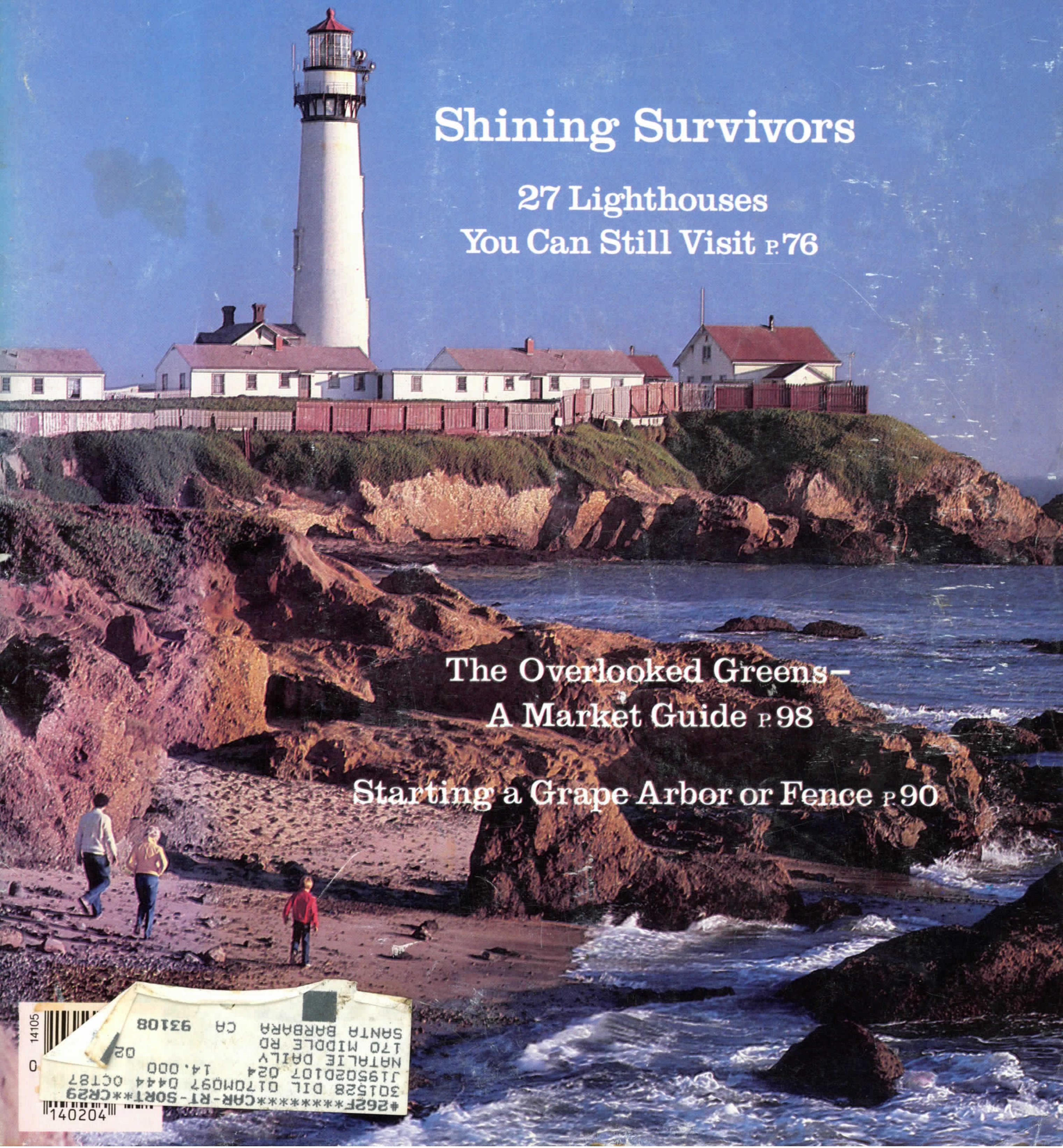


Shining Survivors

27 Lighthouses You Can Still Visit P. 76

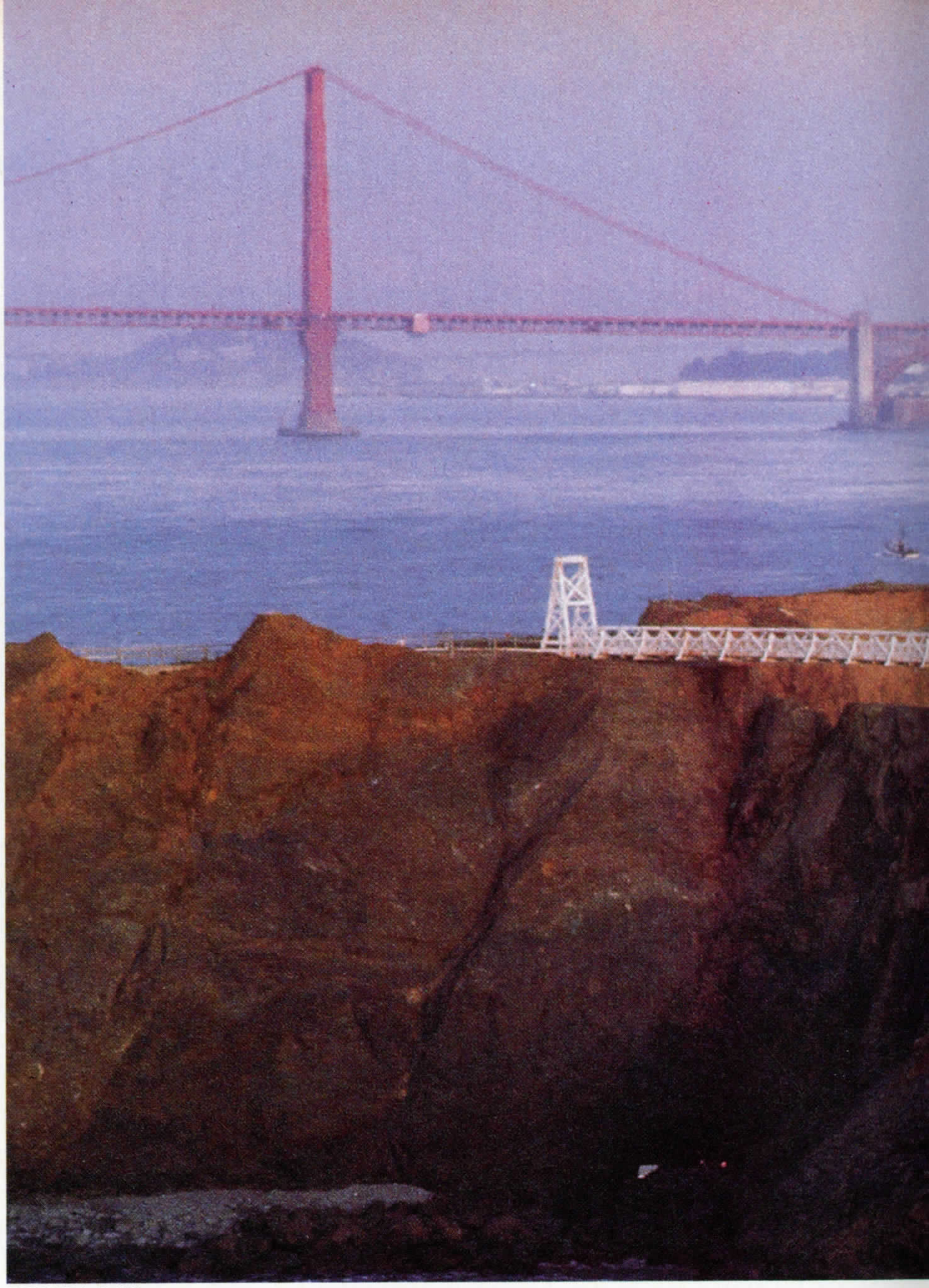
The Overlooked Greens– A Market Guide P. 98

Starting a Grape Arbor or Fence P. 90

***Lavender dusk** cloaks the Golden Gate, just east of Point Bonita Lighthouse, as tour gathers at fog-signal building. Access is by steel suspension bridge*

BILL ROSS

***Gingerbread-delicate** Point Fermin Lighthouse once guided ships into harbor in San Pedro. Now it's part of a city park*



NORMAN A. PLATE

Shining survivors

Many of the West's lighthouses are gone. All the ones left are automated. But 27 still welcome visitors. Go for the rugged beauty, the history, the marvels of 19th-century technology

Anchored on hostile landfalls and lonely islands, the lighthouses of the West Coast have withstood the fury of storms and the hardships of isolation. But recent years have exposed them to new dangers—destruction as they slip into obsolescence, or drastic alteration as automated equipment attempts to modernize them.

Several lovely and historic lighthouses were destroyed before the loss could be felt. "It hurts deep to know they're gone," comments Wayne Piland, 84, a West Coast lightkeeper for 27 years.

But there's good news, too. Many of these shoreline landmarks have been or are being restored, thanks to the U.S. Coast Guard and the efforts of concerned citizens. Some have been given new purposes and opened to the public—as museums, hostels, even a bed-and-breakfast inn. A few are part of state or national parks and offer interpretive programs.

Our list on pages 82 and 83 covers 27 lighthouses you can visit in California, Oregon, and Washington. We also note volunteer groups that played key roles in saving these structures and how you can become involved if you'd like.

February days on the coast can vary dramatically, from brisk and bright to bitter and storm-lashed. Dress warmly and prepare for rain. But you needn't plan far ahead for a quick lighthouse jaunt—just head out when the skies clear.

Many of the beacons are on coastal promontories of stunning scenic beauty; others are in or near parks or wildlife refuges. So your visit may also include beachcombing and driftwood collecting (check area regulations), tidepooling, camping,

***White brick tower** of 1898 North Head light, in Washington's Fort Canby park, supports modern aeromarine beacon; summer tours take you into lantern room*

COTTON COLSON/WEST LIGHT

The glorious, multiprismed Fresnel lens . . . 17 of them still hard at work

First-order *Fresnel lens at Heceta Head is most powerful beacon on Oregon's coast, visible for 21 miles*

Inside lighthouse lens *at Cape Meares, Oregon, you can see how prisms bend light—note eyes of crouched visitor. Center bull's-eye lenses were removed for display in museum. Red panel added color-flash characteristic*

NORMAN A. PLATE

and wildlife-watching (especially migrating gray whales).

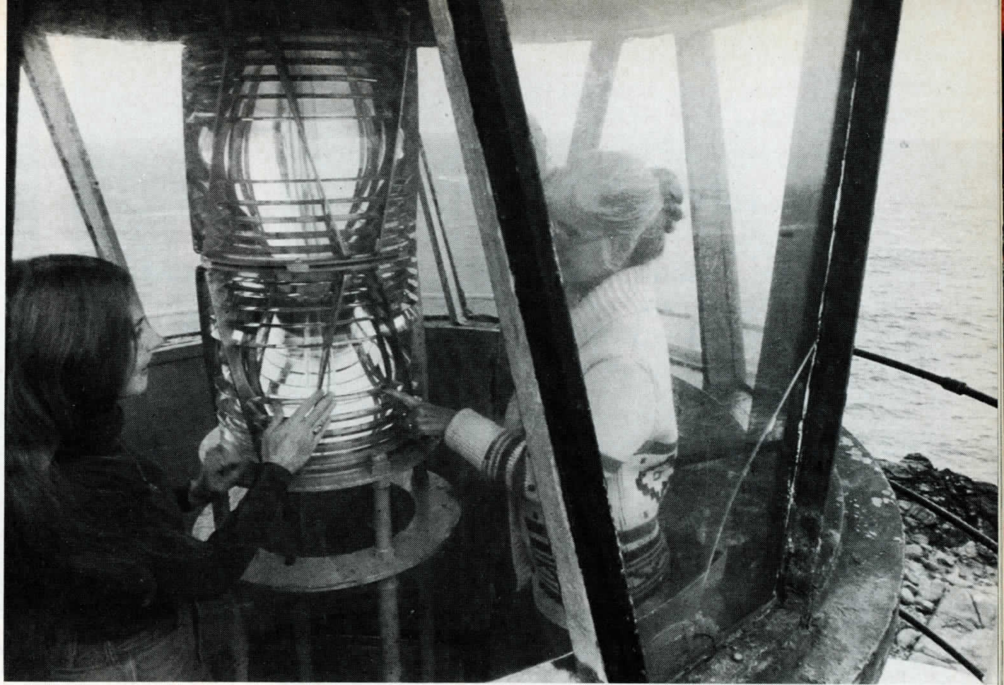
The Fresnel lens: shining eye of the lighthouse

America's first lighthouses used a system of silvered reflectors to intensify the main light source, a whale-oil lamp. But by the 1850s, when the West Coast lights were designed, the government authorized use of technology brand-new in the U.S.: the glorious, multiprism lens invented by Frenchman Augustin Fresnel (pronounce it Fray-*nell*) in 1822.

It was a marvel—a complex array of dazzling glass prisms and bull's-eyes mounted in a brass framework. Each lens cost up to $12,000 at the time, then had to be shipped from France.

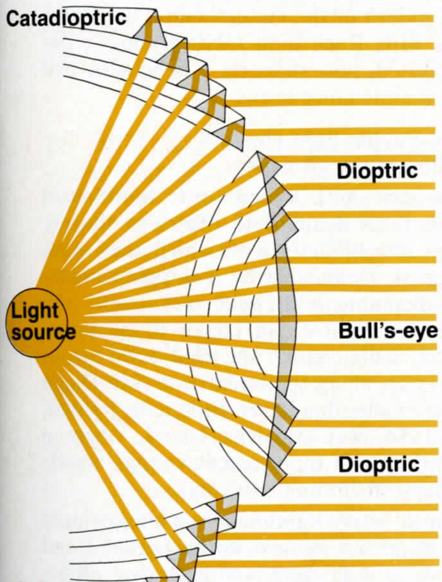
The Fresnel lens was five times more powerful than the reflector system then in use. But for maximum visibility, the light had to be placed high enough to compensate for the curvature of the earth; set at 100-foot height, a light could be seen 18 miles out at sea.

Lenses were ranked in six orders. The weakest, ranked sixth, was used to light lakes, estuaries, and harbors; the largest, first-order lenses were used on fogbound coasts. A first-order lens held up to more than a thousand glass prisms, stood up to 10 to 12 feet tall, and measured 6 feet in girth; it could weigh 3 tons. Many lighthouses (including 17 on our list) still have their original Fresnel lenses, though some are inactive, with modern electric lights casting the beam.



MICHAEL THOMPSON

Up in the tower *at Battery Point light in Crescent City, visitors get close look at 1953 Drumm lens and distant views out over Battery Point and back towards harbor*



How a Fresnel lens works

To bend and magnify rays to form a single plane of intense light, catadioptric prisms refract and reflect; dioptric prisms and center bull's-eye lens refract. With just a 1,000-watt bulb, a first-order Fresnel lens can generate 680,000 candlepower—visible 21 miles out at sea if set high enough

Light source for the early lens was a lamp using up to five concentric wicks and fueled, initially, by sperm oil or lard, then kerosene, and later electricity. The Fresnel prisms could focus the rays of such a lamp into a beam of 80,000 candlepower. By the 1930s, most of the lenses used electric bulbs as a light source, which brought beam intensity up as high as 4.5 million candlepower.

Some beacons employ a fixed or stationary lens projecting a steady beam of light. Others have a set flash-and-eclipse pattern, called the light characteristic; the interval of its repetition is called its period. When you visit a lighthouse, you can read its pattern by timing the flash and eclipse, regularly repeated at 5- to 15-second intervals. Each light has a unique characteristic, like a signature, and mariners distinguish one beacon from another by checking its pattern on a chart called a light list.

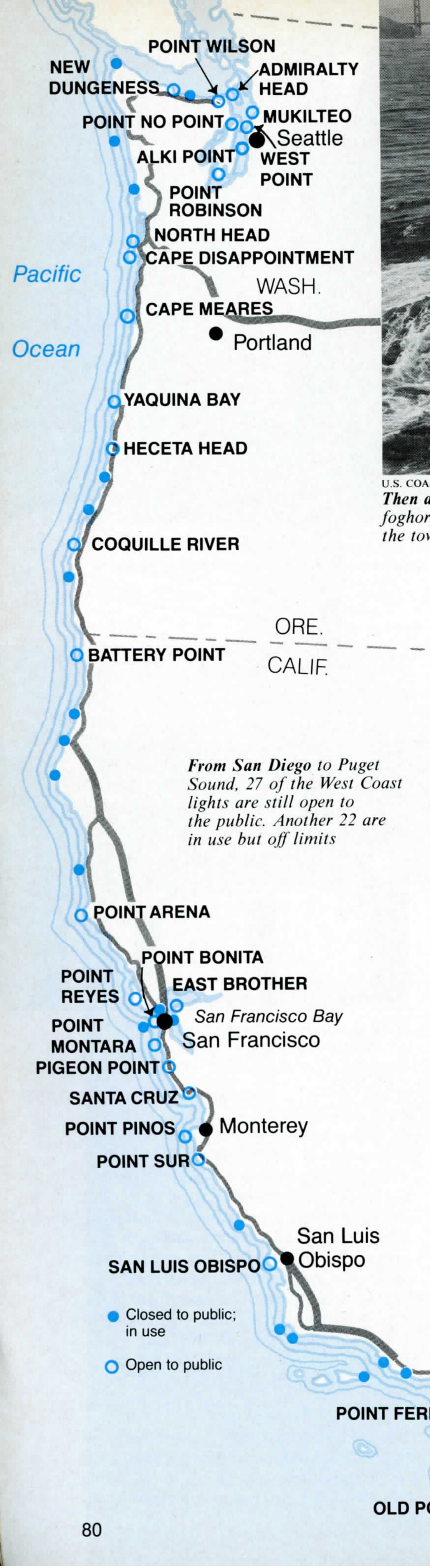
To create a flash, the entire Fresnel lens was placed on wheels or ball bearings in a track or—at some stations—floated in a bed of mercury. This way, even a 6,000-pound lens could be turned with the push of a finger. A clockwork drive, powered by a weight wound by hand, rotated the lens. In one-man stations, the clockwork was often set so that the keeper had to rewind it every 4 hours—requiring a trip to the light several times a night.

In dense fog, a light even stronger than the most powerful made would scarcely be seen a half-mile away. So in locations susceptible to heavy fog, audible signals were vital. Cannons and huge bells were the most popular in the early days. But steam whistles soon gained prominence; later, compressed-air horns driven by diesel or electric motors were used. Their bass voices and mournful tones each have characteristic patterns of sound and pitch, also identified on the light list. On San Francisco Bay alone, 89 different horns, whistles, sirens, and bells sound out in foggy weather.

Hold your ears! *At East Brother, staff occasionally sounds twin diaphone foghorns (now deactivated) mounted on rooftop*

LAMP and the end of an era

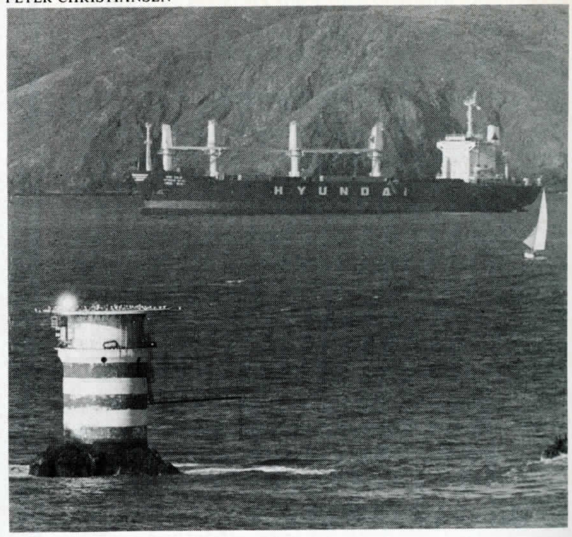
The manned lighthouse is an endangered species. Tight budgets, modern shipboard electronics, and the necessity of using cost-effective automation technology in-



From San Diego to Puget Sound, 27 of the West Coast lights are still open to the public. Another 22 are in use but off limits

U.S. COAST GUARD

PETER CHRISTIANSEN



Then and now: *In 1957, Mile Rock light, southwest of Golden Gate, had twin foghorns and boom with rope ladder for loading crew and supplies. In 1966, the tower was removed. Today, it's just a helicopter pad with automated beacon*

Lighthouses yesterday and today: What happened to the "wickies"?

evitably threaten its demise. In 1968, the Coast Guard introduced its Lighthouse Automation and Modernization Project (LAMP), which stepped up the pace of conversion.

Of 450 lighthouses operating in the U.S., only 34 are still manned. Of those 34, not one is in the West (our last two—Alki Point and West Point, in Washington—were automated last year). Of some 58 West Coast lighthouses that were manned and open to public visitation in the early '60s, only the 27 we list are open today.

Automation has meant redeployment of Coast Guard personnel—leaving some structures vulnerable to vandals as well as to the ravages of wind and weather. Many stations deemed no longer necessary have been released to be altered and sold or, for safety reasons, demolished—among them, some architectural treasures.

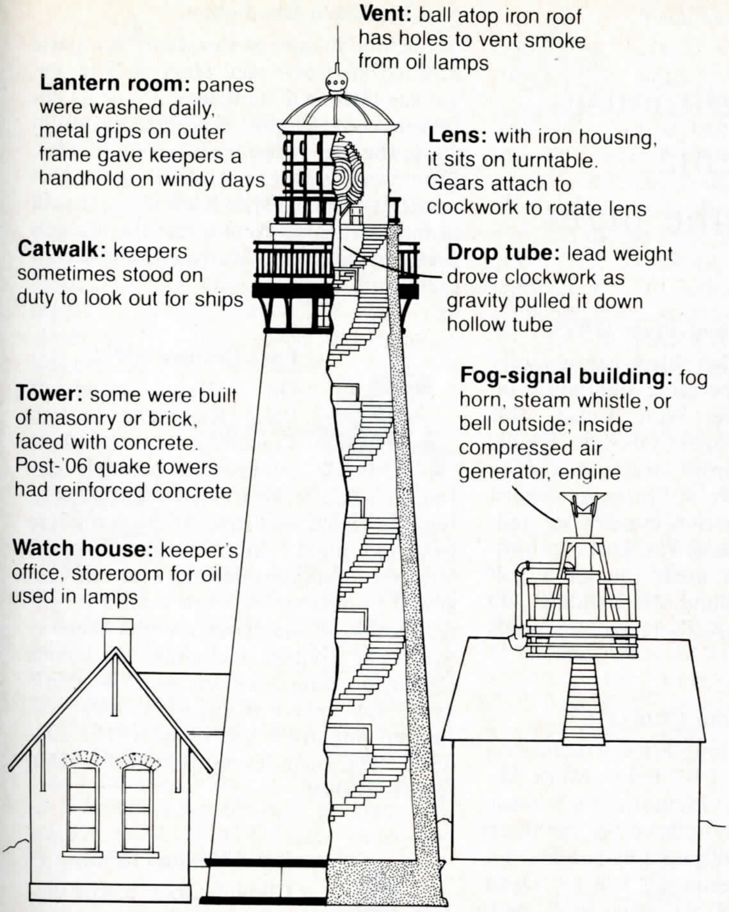
The more drastically changed former lighthouses include several of the most-storied sentinels in America. While not demolished, castle-shaped St. George's Reef, off Crescent City, has been abandoned and left to the elements; Oregon's famous Tillamook Rock light, site of tragic shipwrecks and dramatic rescues, has been gutted and converted to a columbarium, holder of ashes of the dead. And at the mouth of the Golden Gate, the spire-like Mile Rock light (shown above), decapitated, now supports a helicopter pad for maintenance crews.

The Pacific light chain: built against all odds

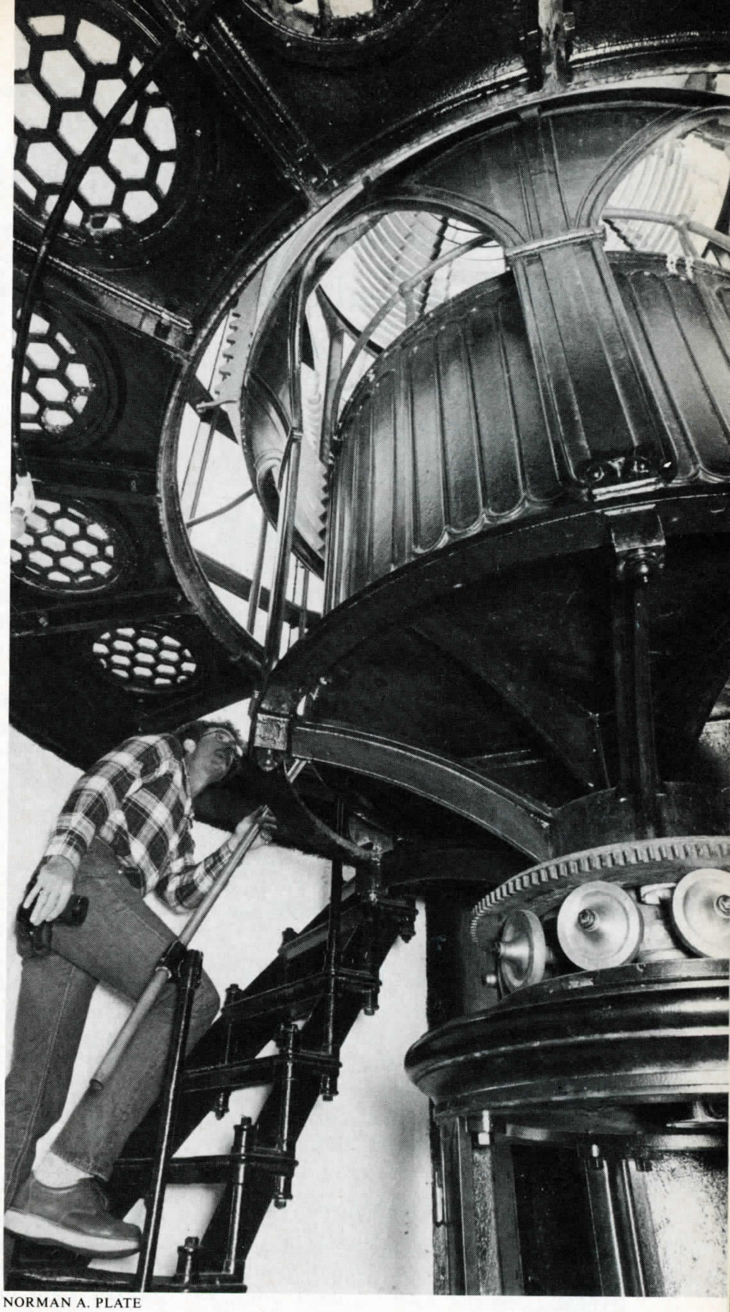
The ease with which some lighthouses have been demolished contrasts sharply with the difficulty with which they were created. Demanded by a shipping industry booming with gold rush trade, the Western light chain began to go up in 1852, with eight Cape Cod–style structures set along the coast from San Diego to the Columbia River. First to be lighted, in 1854, was Alcatraz Island, where a lighthouse of more recent vintage stands today (off limits to visitors).

Almost every lighthouse is white, painted to stand out against its background and serve as a daytime landmark. But differences in topography and climate along the West Coast required a variety of construction methods and materials.

The first light stations were low masonry structures, sturdy but built very simply because of the difficulty getting work crews and materials to sites with no roads or nearby building supplies. Later lights were both more graceful—slender wood-frame structures—and more ambitious—conical brick towers framed in iron. Wave-swept rocks such as St. George Reef required sterner stuff: 2½-ton granite blocks.



Typical anatomy *of an 1870s lighthouse saw little change, apart from updated fog signals, over next half-century. Most were electrified by 1930s, automated by 1970s*



Iron base *of lens sits on turntable under lantern room. Box below it held clockwork to rotate lens*

NORMAN A. PLATE

An 1874 Lighthouse Service report summed up the differences in building West Coast beacons: "On the Atlantic Coast, it is difficult to raise the towers high enough so as to let the lights be seen at great distance. On our Pacific Coast, the difficulty is to get them low enough (to prevent high fog from obscuring them) . . . our Pacific coast is far more foggy than the Atlantic side."

Since many of the 19th-century decision-makers were relatively unfamiliar with West Coast weather and topography, many lighthouses were improperly placed and had to be relocated or abandoned.

In Southern California, the first Point Loma light was too high and was obscured by fog much of the year; a second station was built lower on the point. In Oregon, builders of Cape Meares hacked a road through dense forest, slogged heavy materials over the muddy track, and erected the tower on the wrong point; but the lighthouse stayed, even after the mistake was discovered.

St. George Reef Lighthouse, constructed on a rock near Crescent City, became a test of endurance, engineering, and financing. It took 11 years, 1,339 granite blocks for the foundation caisson, uncounted blocks in the house itself, and $704,000; by the time of its completion in 1891, it was the most expensive lighthouse construction job in the world.

A day in the life of a "wickie"

Before the Coast Guard took over lighthouse administration in 1939, lighthouses were run by the U.S. Lighthouse Service. Most stations had a keeper and one to five assistants; stations with a fog signal had more assistants. In the 1870s, a keeper could earn $1,000 a year and was expected to keep a garden and small livestock, and to collect his own drinking water from a cistern.

The men (and later, women) who kept those lights were a rare breed. As you climb the spiral stairs of a lighthouse on a visit, think of the countless trips up the tower they made each day: cleaning the lens and lantern-room windows; winding the clockworks; refueling lamps and trimming the wicks (hence the nickname, "wickie"); and performing maintenance and repair tasks. Just listing the keeper's duties took 152 pages in an 1800s manual.

"It was great work, a one-man station, just the wife and kids and me, and no noisy foghorn," says the last keeper at Battery Point in Crescent City. After one of the biggest storms of 1950, he wrote: "The harbor was devastated, breakers 85 feet high smashed windows in the lantern room, but the lighthouse held."

It could also be a lonely life; one log book noted, "When you're stationed on a lighthouse, every letter received is a gift in itself."

Working to save the lighthouses

Private groups and public agencies are working with the U.S. Coast Guard,

San Diego to Puget Sound, lighthouses you can visit. Bring a picnic, watch for whales, even spend the night

California sentinels: heroic keepers, tragic wrecks

Old Point Loma (1855)
In San Diego's Cabrillo National Monument, this tidy whitewashed Cape Cod was one of the original eight lights. At 462 feet, it was the highest in the country—so high that fog often hid its light. In 1891, a replacement was built lower on the point (still operating, New Point Loma light is closed to the public). After lens renovation, the old lighthouse was relighted last year. Open 9 to 5 daily; free. Nearby are good tidepooling, spectacular harbor views, and a free museum with a display of lenses.

Point Fermin (1874)
This beautifully restored Victorian is in Point Fermin Park. It's now a ranger's residence, so you can't go inside, but you can picnic and enjoy harbor activity.

San Luis Obispo (1890)
A lovely Victorian, deactivated in 1969, it's still under Coast Guard management and inaccessible. But San Luis Obispo County Land Conservancy has won a grant to study ways to open it to the public. In April, the conservancy offers launch trips to the lighthouse and whale-watching trips by boat; cost for the 1-hour trip is $10, $5 ages 6 to 17; call (805) 544-9096.

Point Sur (1889)
Closed to the public for years, this light 20 miles south of Carmel has just been acquired by the state parks department; access is limited pending road work. After June 1, you can find out about planned free guided tours; call (408) 667-2315. The granite-towered lighthouse sits 270 feet above the sea on a huge promontory, vital because coastal traffic must change course here. One historic note: in 1935, the Navy dirigible *Macon* went down here; keepers watched, unable to help.

Point Pinos (1855)
The oldest continuously operating lighthouse on the West Coast, this Cape Cod–style Pacific Grove structure, run by women keepers for 40 years, is now a museum. Its tower rises over a cozy, red-roofed masonry house. The working third-order lens is still used, though a golf course doglegs behind the building. On Asilomar Avenue, it's open weekends from 1 to 4; free.

Santa Cruz (1967)
A snug brick structure on W. Cliff Drive, Mark Abbott Memorial Lighthouse was built on the site of an 1860s light by parents of a surfer who had drowned nearby. Open winter weekends from noon to 5, with exhibits; free. Watch for sea lions, brown pelicans.

Pigeon Point (1872)
Design of the conical white brick tower is classic; a 16-sided lantern room tops an elegant black iron catwalk. On tours, you can see the 1,008-prism, first-order Fresnel lens; today an electric light provides the beacon. Walk out to see the 1902 fog signal building with its twin horns. The station, 30 miles north of Santa Cruz, is named after the ship *Carrier Pigeon,* which came up on the rocks near here in 1853. Tours (1 hour) run every Sunday at 10, 11:15, 12:30, 1:45, and 3; donation $1.50, 75 cents for children. There's a dormitory-style hostel ($7.50 a night). Call (415) 879-0633 between 5 and 9 P.M.

Point Montara (1928)
Two cargo steamers piled up on a shallow ledge offshore, so in 1875 a fog signal was built here, 20 miles south of San Francisco. The light tower, atop 70-foot cliffs, was added later. Buildings have been restored (work is ongoing) and opened as a hostel ($5.50 to $7.50 a night; 415/728-7177 from 7:30 to 9:30 A.M. or 4:30 to 9:30 P.M.). Lodging is bunk-bed style, and you help with chores; family rooms are reservable.

San Francisco Bay lights
You can walk out on the windy ramparts of Fort Point National Historic Site, below the Golden Gate Bridge, to see its 28-foot iron-sided light tower, deactivated in 1936; the fort is open 10 to 5 daily; free. From here, you'll spot other lights (not open): the stub of Mile Rock at the mouth of the gate, Lime Point under the bridge's north tower, and Alcatraz Island's concrete spire.

East Brother (1874)
On a 1-acre island off Point Richmond in San Francisco Bay, this light guides ships through narrow San Pablo Strait. Often shrouded in fog, the island was rammed by a tug one pea-soup night. After automation, the Victorian buildings deteriorated until restored by volunteers. Now there's a bed-and-breakfast inn (book months ahead—$225 per couple, including five-course dinner, breakfast, and the short boat ride over). Or reserve a day visit ($10 each person, minimum four); call (415) 233-2385. The boat leaves from San Pablo Yacht Harbor.

Point Bonita (1855)
Clinging to a basalt outcrop northeast of the Golden Gate Bridge, it's reached by trail, tunnel, and suspension bridge. Many wrecks occurred offshore, one on the rocks below—a heroic keeper descended a rope to reach survivors, but the rope ran short and he had to climb back up (they were later saved by boatmen). This low iron tower is spectacular at sunset: guided sunset walks take place the first and third Wednesdays each month; times vary. Open winter weekends for a 2-hour tour at 1 P.M. For directions or to reserve monthly moonlight tours, call (415) 331-1540.

Point Reyes (1870)
A squat iron tower sits at the tip of a knife-like ridge; early keepers had to climb 438 exposed stairs many times daily; visitors now use three ramps and 307 steps. Lonely, barren, beset by storms, it was one of the West's least desirable stations—many keepers quit or went crazy. This is one of the foggiest spots on the coast; some 40 vessels have been lost here. Open 10 to 4:30 Thursdays through Mondays; free. Whale-watchers crowd here winter weekends; go early. The second and last Saturdays of each month, you can join a group to see the spectacular first-order lens relighted, listen to stories; to reserve, call (415) 669-1534.

Point Arena (1907)
The '06 quake toppled the first lighthouse on this long peninsula, 65 miles north of Point Reyes; the current structure has a buttressing "skirt" at its base. In World War II, keepers reported a Japanese sub offshore; officials scoffed, but later a tanker was torpedoed. There's a museum, plus three bungalows for lodging ($60 to $80 a night); call (707) 882-2777. You can climb the 115-foot tower, whale-watch. Open 11 to 2:30 daily; $1.50.

Battery Point (1856)
Topping a wave-washed rock nearly engulfed at high tide, this tiny Cape Cod–style stone light was among the first 16. You reach it only at low tide via a 200-yard spit; the hike is an adventure. Visit a fine museum, climb into the 45-foot tower, picnic and whale-watch from sheltered spots. Curators tell how the lightkeepers lived through the 1964 tidal wave that hit town. In Crescent City, the light is open (tide permitting) May 1 to October 31, 10 to 4 Wednesdays through Sundays; admission is $1.50. For access times and directions, call (707) 464-3089.

Oregon beacons—one hit by a ship, one haunted

Coquille River (1896)
Marking a narrow river mouth a mile north of Bandon, this boxy masonry light sat crumbling for decades until restored as a museum in 1975. It's one of the few lighthouses hit by a ship—in 1903, an abandoned schooner rammed it in a storm. In Bullard's Beach park, it's open by appointment in winter, 8 to 5 daily Memorial Day to Labor Day; free. Fishing, camping, driftwood collecting.

Heceta Head (1894)
The conical brick tower of Oregon's most powerful light is closed, but you can hike up to it and a recently restored 1893 keeper's residence (now used by a local college) on a ½-mile trail. The keeper's house is a Queen Anne confection of spindles, spools, and sunbursts. You can look out to two island wildlife refuges where cormorants and puffins nest. The trail starts in the beach parking lot of 544-acre Devil's Elbow State Park, 30 miles south of Newport (hiking, picnicking, no camping).

Yaquina Bay (1871)
Oregon's shortest-lived light, in Newport, operated only three years before a better-sited one was built upcoast. Saved from demolition and restored, the frame house is now a museum showing how early lightkeepers lived. Ask curators about the ghost story written about this lighthouse. Open noon to 5 daily June 1 to Labor Day, noon to 4 weekends the rest of the year; admission is 50 cents. In nearby Yaquina Bay park, you can picnic and beachcomb.

Cape Meares (1890)
Located 6 miles northwest of Tillamook in Cape Meares State Park, this structure was supposed to be on nearby Cape Lookout. But builders found constructing the iron tower so arduous, it remained even after the mislocation was discovered. Climb up to see a first-order lens with red flash panels. Whale-watching is good, and you can picnic, hike, camp.

Washington lights—on windy capes, snug islands

Cape Disappointment (1856)
Next to Fort Canby State Park, 15 miles north of Astoria, this light guards the "graveyard of the Pacific," a notorious Columbia River bar. Of many wrecks here, one was a World War II Liberty Ship; it broke in half mounting a massive swell over the bar. The 53-foot conical tower, Washington's highest light, sits on a tall, forested bluff.

North Head (1898)
Also in Fort Canby State Park, this sturdy 65-foot brick-and-concrete station is one of the windiest in the country (it once clocked gusts of 160 mph). You can hike to this one and Cape Disappointment; summer ranger-led hikes take you inside. Check in at the park's Lewis and Clark Visitor Center (open 9 to 5 weekends only till Memorial Day, then daily till Labor Day); (206) 642-3029 or 642-3078.

Admiralty Head (1897)
Located on Whidbey Island, Admiralty Head is now a visitor center in Fort Casey State Park, open 10 to 6 Wednesdays through Sundays from mid-May to mid-September.

Along Puget Sound
The following seven lighthouses are open weekends from noon to 4 with Coast Guard personnel to answer questions.

New Dungeness (1857)
Sitting on Admiralty Island, this is more like a New England light, with brick keeper's house and conical brick tower.

Point Wilson (1914)
Surrounded by Fort Worden State Park; hiking, picnicking, camping. It's a landmark in Port Townsend.

Point No Point (1880)
Small, low-towered wood-frame lighthouse rises from the Kitsap Peninsula near Hansville.

Mukilteo (1906)
This light sits east of the town of Mukilteo on Possession Sound next to Mukilteo State Park. The ferry passes right by its red tower and tidy grounds.

West Point (1901)
In Discovery Park, this rather unprepossessing wood-frame structure combines keeper's residence, tower (fourth-order lens), and fog-signal building. But views of Puget Sound and downtown Seattle alone make the visit worthwhile. You must park outside and walk about a mile in. Visit Discovery Park's visitor center for ideas on hiking, picnicking, wildlife-watching.

Alki Point (1913)
In West Seattle, this was one of the last two manned lighthouses left on the West Coast. Its 37-foot octagonal tower (fourth-order lens) marks a turning point on the Seattle-Tacoma route. The lovely wood-frame keeper's quarters are still lived in, and Coast Guardsmen are here to answer questions. Good views and beachcombing at Alki Beach Park.

Point Robinson (1915)
On the east end of Maury Island, this one has a 52-foot tower. The low, grassy point looks across to a narrow channel and forested hills.

R. VALENTINE ATKINSON

Elegant but faded, *Montara Lighthouse keeper's quarters are getting gradual facelift. Inside, barracks is now a hostel—you sleep on bunks, handle your own KP*

Weekly spruce-up *at East Brother is done by Monday Morning Gang, a group of volunteers*

Westerners are ingeniously giving new life to lighthouses . . . as inn, hostel, museum

which administers the light stations, to encourage restoration. Recent changes in Coast Guard policy have made it somewhat easier for outside groups to lease and restore the lighthouses. But proposals must meet EPA standards, and groups must prove they can continue to fund maintenance of the structures.

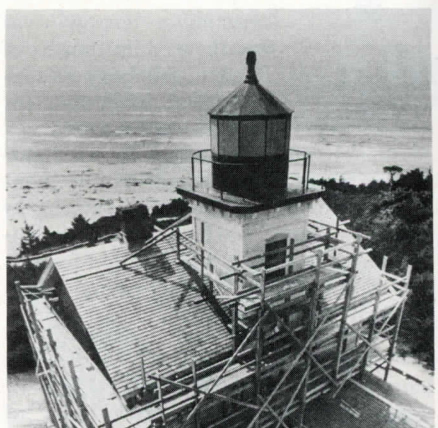
Westerners have come up with some innovative ways to preserve lighthouses and give them new life. When local citizens saw San Francisco Bay's East Brother light station sink into decay after automation in 1969, they formed East Brother Light Station, Inc., raised money, and rebuilt the rundown station. It's now a successful bed-and-breakfast inn.

In Oregon, townspeople and the Newport Historical Society worked with the state park system to declare the Yaquina Bay light a landmark, halt proposed demolition, and open it as a museum.

A corporate sponsor, Crocker Bank, helped fund work at three lighthouses: Pigeon Point, Point Montara, and East Brother. The American Youth Hostels group leased the lighthouse buildings at Pigeon Point and Point Montara and opened them as overnight lodgings.

Requests to fix up surplus lighthouses have soared. "With streamlined approval measures, we should see more restoration projects on line, more lighthouses opened to the public," states Coast Guard spokesman Lieut. Robert Hayden.

To learn more about lighthouses that still await restoration, you might want to join the U.S. Lighthouse Society, started in California in 1984 and the only group of its kind. Annual membership costs $15 and includes a quarterly magazine, the *Keeper's Log;* write to the group at 130 St. Elmo Way, San Francisco 94127, or call (415) 585-1303. □



Success story: *Lighthouse in Yaquina Bay, Oregon, was crumbling when work crews started major restoration in 1975 (above). Sparkling white clapboards and red iron tower now make it a proud local landmark. You can picnic or beachcomb here*

NORMAN A. PLATE